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## User Research and Real User Problems: Improving the User Experience of Online Shopping

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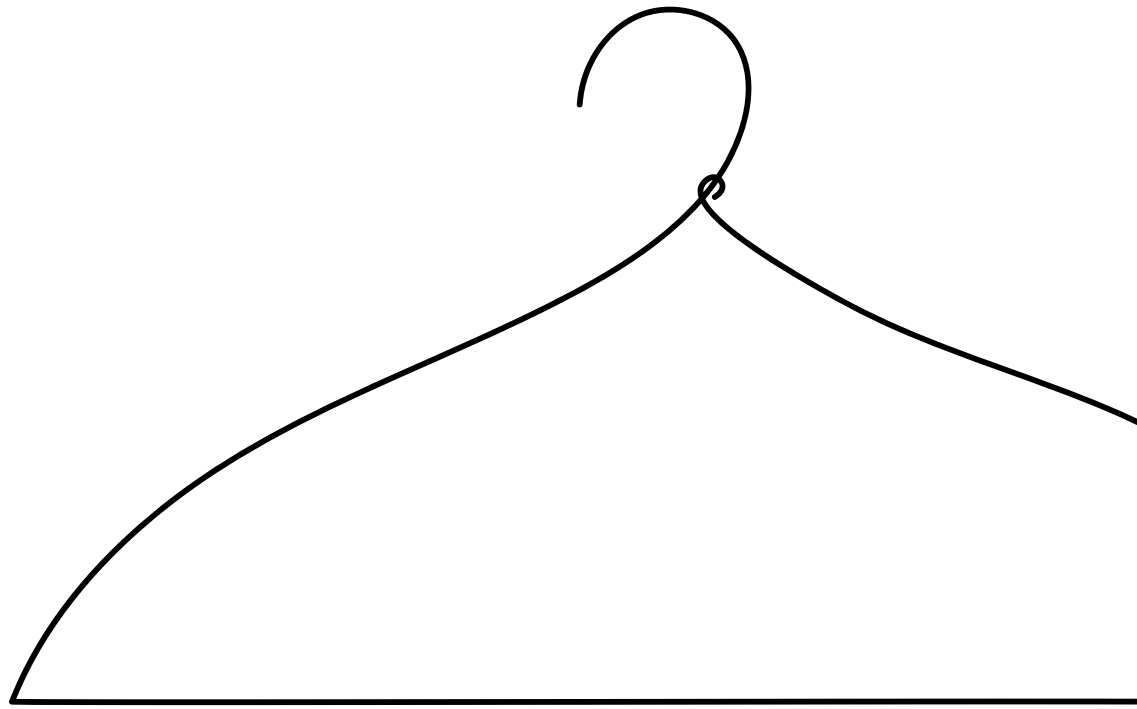
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**User Research and Real User Problems:  
Improving the User Experience of Shopping Online**

Lauren Ciulla

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University of Connecticut Honors Thesis  
May 2020



# **User Research and Real User Problems: Improving the User Experience of Online Shopping**



**Lauren Ciulla**

University of Connecticut  
Honors Thesis | May 2020

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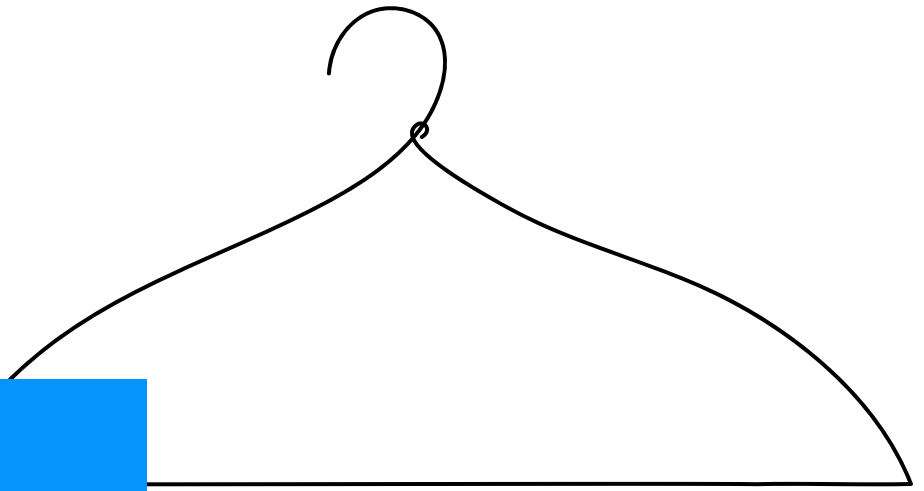
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## Abstract

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“User Research and Real User Problems: Improving the User Experience of Online Shopping” is a creative thesis project incorporating user research, user experience design, and coding skills. The first phase of the project consisted of market research and generative user research to develop a plan for a shopping companion app. The findings of this research shaped the scope of the project according to user needs and established the basis of a plan to create a progressive web application and Google Chrome browser extension that will respond to specific user problems. These tools would solve three key user problems: users do not know what size to order when shopping online, users are uncertain about the items they order online due to a lack of familiarity with the items prior to purchase, and users cannot visualize items on themselves when shopping online. I constructed a user experience to solve these problems, incorporating the principles of user-centered design and user experience best practices. The progressive web application and Google Chrome extension will work together to store user-provided data, create size/style recommendations based on this data, and display crowd-sourced reviews for items in online stores. Using the Vue.js JavaScript framework, Firebase data storage, and the Agile Project Management Methodology, I built a proof of concept for the progressive web app, and have outlined a comprehensive plan for next steps.



## Introduction

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The enduring goal of this thesis is to improve the user experience of online shopping. It initially began with an idea that took the form of a product pitch, but its scope and objectives shifted once I conducted market and user research. The resulting project proves to be an interesting study in the importance of user research and user-centered design.

“The next big thing is the one that makes the last big thing usable.”

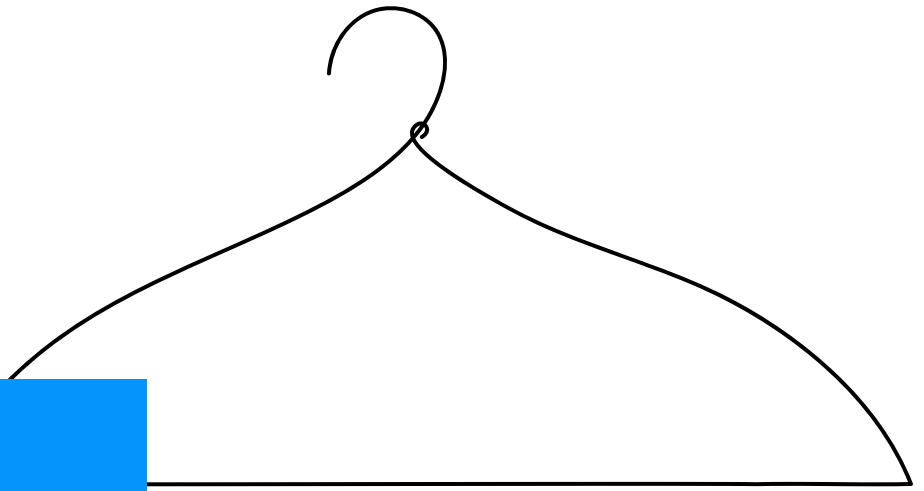
Blake Ross, Co-creator of Mozilla Firefox

## Concept

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Initially, this thesis began with an idea for a product. I sought to create a piece of technology that would allow users to mimic the style of others by finding items that are similar, if not the same, for sale online. Users would be able to take a photo of an article of clothing with a smartphone app, and computer vision software would identify the item, where the user can

purchase it, and similar items that are being sold at lower prices. I thought I had everything figured out, all the way down to a catchy product pitch (“The Shazam of Shopping” was about to take the world by storm). That was my first mistake—I started with the product, not the user.



## Research

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I thought I had constructed a solution to a user problem without consulting a single user. I dreamed up use cases, potential issues, and set out to begin development. Thankfully, I decided to throw a little research into my plan—a formality to sprinkle into the final report. Upon performing a quick Google search, I learned that the product I was planning to create already existed. Furthermore, after taking a look at actual users from my target market, I discovered they had several common pain points within the experience of shopping online that I had never considered. This research completely changed the scope of my thesis, shaped the outcome of the project to respond directly to user needs, and demonstrated the importance of user research and user-centered design.

## Market Research

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The first step of this project consisted of market research. I was seeking to create a computer vision tool that would identify items photographed by users and provide shopping options, so I needed to gather information on what kinds of products and technology already existed in this realm of products.



It quickly became apparent that the product I was seeking to build already existed in several forms. The product that is most similar to the one I was planning to build—and, incidentally, also the most successful—is Google Lens. Google Lens uses computer vision, machine learning, and artificial intelligence to detect objects through the user’s smartphone camera and leverage a query in Image Search for each object. It utilizes TensorFlow, Google’s open source machine learning framework, and Google’s Knowledge Graph to help it connect words with corresponding images and understand categories. The product not only recognizes objects, but can also copy text from an image and return information on books and movies. Google Lens even contains a “Style Search” feature, where users can point their smartphone cameras at outfits and find items that are stylistically similar, shopping options, and relevant reviews.

Google Lens is the most prominent version of this technology, but competitors exist as well. Examples include Samsung’s Bixby Vision, Image Analysis Toolset, and Bing Visual Search. These tools that are already on the market work well. The market gap I was planning to fill proved nonexistent, so I needed to change the scope of my project. I pivoted from market research to needfinding to identify a commonly unmet need or problem users face during their online shopping experiences.

## User Research

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User research was integral in shaping the outcome of my thesis. Throughout the process I separated myself from users, identified patterns in their behavior, and developed empathy for them. After defining target users as 18 to 24 year-old females who shop online frequently and care about fashion a moderate to high amount, I sought to understand their needs, priorities, and goals within the context of shopping online.

## Generative Research

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Erika Hall defines generative research as “the research you do before you know what you’re doing” (*Just Enough Research*). Generative research is

sometimes called exploratory research, and it is an effective tool in the needfinding process. It helps define the problem a designer or developer seeks to solve by leading to ideas and helping to determine the most commonly voiced unmet needs. Common forms of this type of research include interviews and reviewing existing literature. In order to determine the needs of my target users, I held interviews and conducted secondary research to utilize existing studies regarding online shopping.

## Interviews

With the goal of gaining empathy for users and understanding their unmet needs, I conducted interviews with people in the target demographic. Prior to sitting down with the interview candidates, I constructed an interview guide to establish the primary focus of my research and keep the process on task. The interviews began with a description of the purpose of the study, which I defined as “generative research meant to identify commonly unmet needs in the context of retail.” Because the nature of this research was exploratory, I kept the base questions extremely general and let the interviewees guide where the conversation ended up. I asked every subject four foundational questions:

- “How often are you online?”
- “Can you walk me through a typical day as far as technology is concerned?”
- “How do you decide which stores you order online from?”
- “Is there anything that frustrates you about shopping online?”

Based on their answers, I asked relevant follow up questions and prodded them to elaborate as much as possible. My sample size was small, consisting of five participants within the age range of eighteen to twenty-one. A larger sample size likely would have been beneficial, but using a smaller group allowed me to have longer, more detailed conversations with each one.

The first two questions were deliberately vague, focusing on the technological habits of the participants as a whole before delving into their behavior as it relates to online retail. The purpose was to see if users viewed shopping online, or perhaps even clicking on retail ads, as an established

element in their routines. Interviewee 5 was the only participant that mentioned online shopping while walking me through a typical day of technology usage, reporting, “I have apps for all my shopping.” When asked to elaborate, she listed the apps she uses the most, and revealed that she usually only utilizes them to browse. Answers to the third and fourth questions in the interview guide provided the majority of the data that led to important conclusions regarding user needs and pain points.

Many of the girls interviewed voiced concerns about the uncertainty that comes with ordering an item online. Interviewee 1, Interviewee 2, Interviewee 3, and Interviewee 4 all mentioned not being able to try items on when asked about their frustrations when shopping online. Interviewee 4 mentioned, “You never know what size. You can’t try it on, so if it doesn’t fit it’s a hassle to bring it back.” Interviewee 1 explained, “I very much need to try things on because everything fits me differently.” For this reason, she “...usually just [browses] stores that [she] already [goes] to in real life.” She claimed, “I like to already know about how the clothes are gonna fit me.” Interviewee 1 also praised the store ASOS for its accurate and precise sizing chart. ASOS provides body measurement guides, as well as a section where users can select stores they are familiar with and report what sizes fit them there. ASOS uses this information to predict the user’s sizes in their clothing. Users, although frustrated by their inability to try things on when shopping online, seem to appreciate guides and metrics that seek to make the size selection process more accurate.

Interviewee 3 mentioned that “...not being able to see the product in person or to be able to try it on just to get an accurate size, color, or perception” is frustrating for her. Her answer indicates that shoppers care about more than just the fit of the clothes. Colors, materials, and other important factors can also be misrepresented online. Interviewee 5 added, “I also don’t like when they don’t have clothes on actual people.” If users cannot try the clothes on for themselves, it seems that they prefer to see the clothes on *someone*, instead of no one.

Overall, these interviews seemed to indicate that users want a more hands-on experience while shopping online. They want to know exactly what they are ordering, and they want to make sure the items they purchase

are going to work for them. I created an affinity diagram to establish relationships between these common concerns. The comments from the interviewees generally fell into two categories: frustrations with shopping online, and positive features of online stores. The three most commonly voiced frustrations were not knowing what size to order, not being able to visualize items on themselves, and uncertainty due to lack of familiarity with stores and their items. The most frequently cited positive feature of online shopping was reliable testimonials. Interviewee 3 noted that she decides which stores to purchase from based on "...if other people [had] good experiences with product quality," and Interviewee 4 stated that she purchases items "If [she sees] someone else has something that [she likes] and [she wants] it."

## Affinity Diagram

### Frustrations with Shopping Online

#### Not Knowing what Size to Order

"**You never know what size.** You can't try it on, so if it doesn't fit it's a hassle to bring it back."

"I very much need to try things on because **everything fits me differently.**"

#### Ads

"I never click on ads. I feel like I'm gonna get a virus. Also, **ads make me mad.** Why would I entertain them?"

#### Can't Visualize Items on Self

"I also don't like when **they don't have the clothes on actual people.**"

"I don't like that **you can't try things on.**"

#### Lack of Familiarity with Store/Items

"**I wouldn't leave my comfort zone online.** I like to already know about how the clothes are gonna fit me."

"With colors, **you never really know for sure.**"

"I don't like **not being able to see it in person** or get an accurate size, color, or perception."

"**You don't know if it'll be what you think.**"

#### Cost/Time of Shipping

"Shipping is expensive, and that deters me. **I wouldn't have to pay shipping if I just went to the store.**"

#### Crowded Interfaces

"When it's kind of **jumbled.** They have all these ads. I just want to go to categories."

### Features of Online Stores Users Like

#### Accurate and Detailed Size Charts

"I like about ASOS. They let you pick your size in stores you know. They also give you **body measurement guides.**"

#### Promotions

"[I choose stores by] **who's having sales.** I don't buy things full price."

#### Reliable Testimonials

"Like **if other people have good experiences with product quality,** and safe and undamaged delivery."

"If I see **someone has something that I like** I'll order it."

#### Quick Delivery

"[I choose stores based on] like the **speed of delivery.**"

## Secondary Research

In addition to consulting users from the target market, I also conducted secondary research to review findings from existing studies on user habits in the realm of online shopping. The concerns that were uncovered in the interview data regarding uncertainty and the desire for reliable testimonials were also represented in findings from my secondary research. Various reports on ecommerce emphasize the importance of personalization in the context of online shopping. “Online Shopping Personalization – Statistics and Trends,” a study conducted by Khalid Saleh, reported that 53% of the shoppers surveyed believe that retailers who personalize their shopping experience provide a valuable service. This personalization increases a sense of familiarity with a store, therefore diminishing one of the most commonly voiced frustrations found in my own research.

Personalization proves to be an increasingly important aspect of the online shopping experience. In “Retail Personalization: Engaging Today’s Consumer,” Noelle Haubert points to stores like JustFab that have users take a quiz regarding personal preferences before they shop. These stores gather personal information before the user can even enter the online shop so they can show users only the items that will likely interest them. Haubert asserts that personalization increases average order value. Saleh’s study supports this assertion and shows that shoppers are more willing to provide personal information if they know it will benefit them in some way. The findings from my secondary research revealed that personalization could be an effective way to augment a user’s sense of familiarity with a store, and users would likely be willing to supply information about themselves if it leads to an improvement in their shopping experience.

This portion of my research also inadvertently contributed to a second round of market research. In “The State of the Ecommerce Fashion Industry: Statistics, Trends & Strategy,” Aaron Orendorff mentions Virtusize, a company whose product enables shoppers to know what size to order by measuring their own clothing items and using them for reference. Virtusize is marketed to online stores, and only partners with shops that pay for its service. The tool seems like one that would diminish the commonly voiced

frustration of not knowing what size to order, but its exclusivity limits its reach. Nonetheless, it takes the concept of personalized online shopping further, integrating the personalization into the experience of viewing specific items and selecting a size.

## Determining User Needs: A Problem and a Solution

The commonly voiced concerns, positive features of online stores, and findings from my secondary research sources can all be consolidated into a single problem statement: A shopper who feels uncertain about and unfamiliar with a store and its products needs to know that a specific item will work for them before they order it, but is unsure of what size/color/style and cannot visualize the item on themselves. Based on this problem statement, I established two necessary features: a personal size reference tool and a crowdsourced reviewing tool.

### Personal Size Reference Tool

The personal size reference tool will solve the problems of not knowing what size to order and lacking familiarity with a specific store and its items. Users will be able to enter size information about themselves, including their own body measurements and the dimensions of various clothing items that fit them well. They can either measure these items themselves or select them from the online store where they were purchased so that the tool can scrape dimensions from the product description. The tool will build a profile focused on an ideal or preferred clothing size, taking items that fit the user well into account instead of listing exact body measurements. For example, a user's waist might measure twenty-eight inches, but the shirt they like best might have a diameter of thirty-two inches because they prefer loose-fitting items. This user will likely prefer shirts with diameters close to thirty-two inches, but traditional size guides would recommend shirts with measurements closer to twenty-eight inches. The personal size reference tool will offer more personalization than a traditional size guide because it emphasizes preference over exact body measurements.

The personal size reference tool will also be able to scrape measurement data from an item a user is looking at, recommend the best size, and indicate how much the measurements differ from the user's ideal dimensions. It will help users set accurate expectations of what they can expect when the item arrives. The tool incorporates the positive reported features of personalization and accurate size charts, with enhanced personalization.

## Crowdsourced Reviewing Tool

The crowdsourced reviewing tool will solve the problems of not knowing what size to order, lacking familiarity with a specific store and its items, and users not being able to visualize the item on themselves. Users will be able to add a review to any item on any website, and they will respond to short prompts as part of their review. The tool will contain optional rating scales for quality, accuracy, value for money, size accuracy, and more. Users will also be able to add personal photos to their reviews so shoppers can see what items will look like on various body types. While shopping, users will see reviews that correspond to the items they are looking at. If their item has not been reviewed yet, they will be able to see reviews for similar items from the same store. Reviewers will be able to build credibility through continued reviewing, and shoppers can in turn see this credibility ranking. This tool incorporates reliable testimonials, a commonly reported positive feature of online stores.

## Pre-Visual Design

After defining the needs of my target users and determining features that can meet them, I began the pre-visual design process, which began with deciding on a format for the features. The crowdsourced reviewing tool will be located in a Google Chrome browser extension, and the personal size reference tool will take the form of a companion progressive web app. As a Chrome extension, the crowdsourced reviewing tool can be used concurrently with any online shopping website. The Chrome extension

will be able to read data from the personal size reference tool, so it can recommend sizes and similar items in a seamless shopping experience.

## User Goals and Stories

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The design and development stages of this project were guided by a comprehensive set of goals and user stories. I defined the goals in response to the problem statement: A shopper who feels uncertain about and unfamiliar with a store and its products needs to know that a specific item will work for them before they order it, but is unsure of what size/color/style and cannot visualize the item on themselves. The first goal is finding items that fit well and suit the user's style preferences, and the second goal is knowing and telling others what to expect from a purchase. The user stories that complete the goal of finding items that fit a user well and suit their style preferences are:

- As a user, I can enter information about an item that fits me well so that I can find other items that fit me well.
- As a user, I can enter my body measurements so that I can figure out my size and find items that fit me well.
- As a user, I can see and understand all of the information and preferences I have entered so that I can use them to find items that fit me well and suit my style preferences.
- As a user, I can easily understand how well the item I am looking at will fit my body and style preferences so that I can find items that fit me well and suit my style preferences.

The stories that complete the goal of knowing and telling others what to expect from a purchase are:

- As a user, I can add reviews to any item (through description, rating scales, and image uploads) on a shopping website so I can let others know if it met my expectations.
- As a user, I can see reviews for related items if my item has none so that I can get the best idea of what to expect from the item.
- As a user, I can gauge the credibility of reviews by seeing the number of items reviewed by each profile so that I can know how much to take each review into account.



These stories were constructed to guide the design and development process toward the goal of creating a progressive web application and Chrome browser extension that respond to the specific user needs and problems.



## Designing a Solution

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The user research I conducted and the conclusions drawn from it yielded the information I needed to begin designing a solution. It provided the problem I needed to solve, the features that could do so, the goals my interface needed to help users achieve, and the stories users needed to be able to complete while using my product. This information came directly from users, through both primary and secondary research. The problem I was now seeking to solve was vastly different than the problems my original computer vision product aimed to tackle.

User research separated my own desires from those of the user, and it guided me to construct an experience that would meet their needs. This separation is a vital element of user-centered design. One of the case studies in “User-Centered Design Stories: Real-World UCD Case Studies” details the journey of the RevLev Company during this process. In the same way that I had come up with a product I thought users would be crazy about, the RevLev Company was concocting myriad new features for each new release of its photo editing app, RevPhoto. The company could not understand why sales were dipping so drastically until it started listening to actual users, who had been reporting for years that they did not need or use any of the new features offered in the updates. They had originally

come to RevPhoto for a quick, simple photo editing software. These new features were overwhelming the app and making the user interface unnecessarily complicated. It became essentially unusable for their target user, non-professional home photographers. The RevLev Company learned the importance of user-centered design the hard way, by tuning into what users had to say only after sales began suffering. Fortunately, I noticed a discrepancy between the product I wanted to create and what users actually needed before design or development began. I was therefore able to shape the outcome of my project to respond directly to user needs, as any user experience designer should.

## **Constructing a User Experience**

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With a research-founded problem statement, user goals, and user stories in mind, I set out to construct a user experience that would incorporate all of this information, as well as affective design. I focused on building the experience as a whole before incorporating visual design and branding so that I could be sure it would adequately meet user needs.

## **Affective Design**

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Affective design focuses on user needs and eliciting a positive psychological or emotional response. It “pays specific attention to the subtle qualities and meanings of human-product interaction” (Camere and Bordegoni 1). This type of design ensures that the product will not only solve user problems and meet their needs, but also evoke some degree of delight in the user as it does so.

Goals and tasks are at the crux of user-centered design. The Design Hierarchy of Needs prioritizes functionality over creativity, or user tasks over affective design. While this seems logical, it is important to note that affective design has an immense impact on our ability to complete tasks successfully. For this reason, affective design plays a vital role in user experience design.

Don Norman defines three levels of cognitive processing that influence design: visceral, behavioral, and reflective. Visceral processing involves reacting to visual and other sensory components of a product. Behavioral processing manages simple, everyday behaviors. Finally, reflective processing consists of conscious consideration and reflection. All three levels help consumers form opinions about products, but they do so in different ways.

Behavioral processing was historically the main focus of interaction design. It focuses on how users complete goals and tasks, how long it takes them to do so, and how successful they can be at any skill level. Naturally, when a product makes it easy for users to complete tasks, it is likely to be considered a successful one. Conversely, if a product restricts users from completing their goals, whether that means limiting a goal completely or just requiring a significant amount of effort, users will not want to use it. This reluctance becomes a problem when the product is among competitors that can provide a more pleasant user experience. Allowing users to complete goals and tasks without significant effort is certainly vital to the process of user experience design, but arguably the most powerful effect on the user's experience is created by visceral processing.

Affective design is based on visceral processing, which is more than just aesthetics. It involves eliciting a desired psychological or emotional response from a product or interface. These responses are very hard to ignore. For example, desk lamps generally tend to offer the same function, regardless of appearance. Despite completing the same task of lighting up a workspace, two different lamps can evoke contrasting responses and therefore be very distinct in the eyes of a consumer. Someone who purchases an antique, traditional shaded lamp would likely be reluctant to switch it out with a contemporary, LED clamp lamp on their home desk. The antique lamp might elicit feelings of calmness and being at home, while the clamp lamp might make the user feel more alert and professional. Both serve the same purpose and complete the same task, but they provoke different emotions and therefore provide different experiences.

These distinct experiences produced by the two lamps are based on sensory aspects, not actual interactions with the products. Visceral

processing involves rapid decisions about what a user perceives about a product. Just like in human interaction, consumers decide almost instantaneously whether they think a product is good or bad, or fun or boring. Affective design aims to control these snap judgements, and the practice is important because impressions are extraordinarily enduring. People like to have their opinions validated, so if a product initially makes them uncomfortable, the negative reaction will influence their thought process while they use the product. Due to the general tendency toward confirmation bias, or the inclination to interpret new evidence as support of existing judgements, people will make less of an effort to learn how to use a product if they have already decided they don't like it. They will approach the learning process with irritation and low patience. In contrast, they will judge an attractive interface to be more usable and therefore exert more effort to learn it. This notion is supported by "User Acceptance of Information Technology," Andrew Dillon's study of usability, where users reported that attractive interfaces were more usable, even when they were given sufficient experience with products that aimed to convince them otherwise.

Affective design works to influence the emotions of users, which is vital because it is nearly impossible to separate feelings from decision-making. Affect allows consumers to determine the status of a situation by manipulating the psychophysical state of a user. Based on physiological arousal, the user can decide whether an interface is good or bad, or annoying or helpful. This emotional response can affect the user's cognitive system, therefore changing the nature of the interaction with a product. An initial negative response to a certain color or layout can hinder the performance of a task or distract from the rational processes of making sense of an interface. Because the completion of tasks and goals can directly depend on the user's emotional state, affective design is paramount to the success of a product.

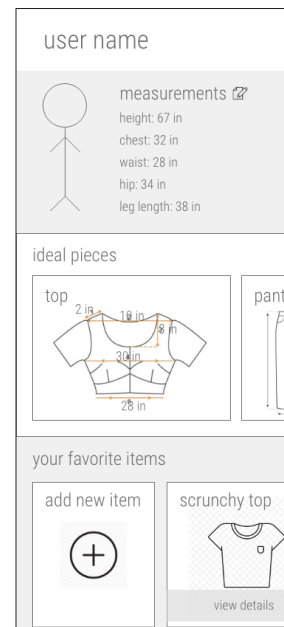
In summary, if I wanted people to use my personal size reference tool and my crowdsourced reviewing tool, I had to design them in a way that would elicit a positive psychological and emotional response. I decided that the emotions I was aiming to deliver with my user experience design were calmness, a sense of being organized, and preparedness. These emotions contrast the feelings associated with my problem statement: A shopper

who feels uncertain about and unfamiliar with a store and its products needs to know that a specific item will work for them before they order it, but is unsure of what size/color/style and cannot visualize the item on themselves.

## Wireframing

I laid out the wireframes for the progressive web app and the Google Chrome extension with the goal of fostering calmness, a sense of being organized, and preparedness in the user. With these target emotions in mind, I designed a clean, simple layout for the progressive web app. I employed Don Norman's Five Principles of Design to ensure the user would not be overwhelmed by a complicated interface or presented with counterintuitive interactions. The interface is learnable, taking advantage of elements users would already be familiar with. For example, the app displays the user-entered items in a horizontally-scrolling list of cards. Users will know they can scroll to see more items because the next card will be cut off, peeking in from the right edge of the screen. This affordance invites interaction, as it makes the engagement visible. The tactic of using a partially visible card is consistent with popular interfaces like Facebook and Instagram, apps the target user would likely be extremely familiar with.

The Google Chrome extension was also designed with a clean and easy-to-understand layout. It repeats components from the progressive web app like sliding scales and buttons, therefore providing a sense of consistency and tying the two together in the user's mind. Furthermore, it employs a minimalistic style so it will fit harmoniously with any online store the user wishes to shop at. Both interfaces employ the affective design and Don Norman's Five Principles to ensure users can achieve their goals and complete user stories in an enjoyable and effective manner.



## Visual Design

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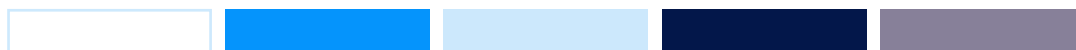
The visual design of the progressive web app and Google Chrome extension also takes affective design into account. Designed to elicit feelings of calmness, a sense of being organized, and preparedness consistent with those associated with the layout, the visual design remains neat and clean. Components have significant padding and room to breathe on both interfaces, and soft semi-transparent overlays guide the user's eye to the interaction at hand. Clickable icons within the app and extension have a uniform, light stroke weight to make them feel delicate and inviting.

## Branding

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The branding of this product takes careful care to elicit the target emotions in a fresh, stylish manner that will appeal to the target user. The personal size reference tool and crowdsourced reviewing tool come together to compose one unified product named "Like a Glove." The name, referencing the popular idiom used to signify when an article of clothing fits almost perfectly, or "fits like a glove," sets the tone for a whimsically styled product users will feel comfortable using.

like a glove



The color palette follows suit, consisting of colors that are calming but never dull. The hues emanate vibrance without feeling loud or overwhelming. The pure white color, used mainly for backgrounds and informational calls to action ("View Details," for example), is the color the brand features most heavily. It emanates feelings of cleanliness and organization. The next most prominent color is the bright blue. It is used

for actionable calls to action (“Add New Item,” “Leave a Review”), and as a background on the loading splash screen to welcome users to the fresh and vibrant world of “Like a Glove.” The lighter blue and the navy blue serve as accent colors, used throughout the interfaces for labels, outlines, and overlays that guide the user’s eye to where it should be. They balance the brighter blue, offering more subdued counterparts to the bright calls to action. Finally, the purple is used for guides and measurements. It is a mellow tone that will make users feel relaxed and in control of their size guides. “Like a Glove” employs a clean, sans-serif font to further promote feelings of mellow organization. Overall, the interfaces should make users feel like they are taking a breath of fresh air, so their online shopping experience can be enjoyable and not stressful.

## Mockups & Prototypes

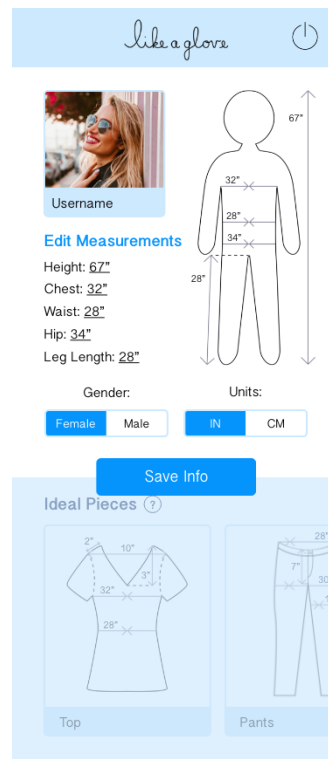
Once the visual design of the interfaces was established and the brand was created, I created mockups for each of the views and put them together into interactive prototypes.



Loading Splash Screen



Dashboard



Edit Measurements



**New Item**

Item Name

Store

Colors

Style

Fit

Loose Form-fitting

Fabric

Add Photo

Measure

Cancel

Save Item

Add New Item

**Scrunchy Top**

Measurements

Shoulder Length: 2"  
Shoulder Span: 10"  
Neckline Length: 3"  
Chest: 32"  
Waist: 28"

Item Info

Store: Brandy Melville  
Colors: Pink  
Style: Casual

Fit: Form-fitting  
Fabric: Cotton

Edit Item

Delete Item

Done

View Item Details

**Scrunchy Top**

Change Item Name

Measurements

Shoulder Length: 2"  
Shoulder Span: 10"  
Neckline Length: 3"  
Chest: 32"  
Waist: 28"

Re-measure

Item Info

Store: Brandy Melville  
Colors: Pink  
Style: Casual

Fit: Form-fitting  
Fabric: Cotton

Edit Info

Delete Item

Save Item

Edit Item Details

**Edit Item Info**

Store

Brandy Melville

Colors

Style

Casual

Fit

Loose Form-fitting

Fabric

Cotton

Save Info

Cancel

Delete Item

Save Item

Edit Fields

**Recommended Size**

Size

XS S M L XL

Load a Review

Recommended Size

**Item Statistics**

Color Swatch

Size

XS S M L XL

Load a Review

Item Statistics

**Categorized Reviews**

Fit

Color

Fabric

Load a Review

Categorized Reviews

**User-Submitted Photos**

Load a Review

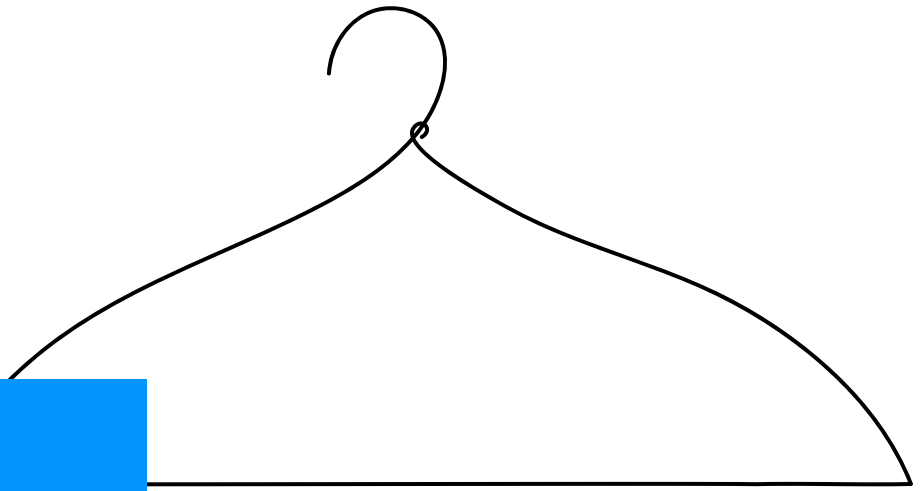
User-Submitted Photos

**Related Items, if Current Item Has Not Been Reviewed**

Load a Review

Related Items, if Current Item Has Not Been Reviewed

Interactive Prototype: [xd.adobe.com/view/69c74401-3b1f-4730-73f3-ab0260af8dd6-1ff6/](https://xd.adobe.com/view/69c74401-3b1f-4730-73f3-ab0260af8dd6-1ff6/)



## Developing Proof of Concept

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The prototypes of the progressive web app and Google Chrome extension showed how the interactions were meant to work, so next I needed to prove that they could. I developed a proof of concept for the progressive web app as the first step in the overall development stage of “Like a Glove.”

### Development Toolkit

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Three tools were vital to the production of this proof of concept: the Vue.js progressive JavaScript framework, Google Firebase, and the agile methodology. The progressive web app proof of concept was built in Vue.js, which was selected for its capability to easily replicate components and its general versatility. Firebase, Google’s comprehensive app development platform, was chosen based on its realtime database, cloud storage, and built-in authentication functionality. Finally, the agile methodology was employed to ensure I would maintain a focus on user needs and utilize an iterative approach to development.

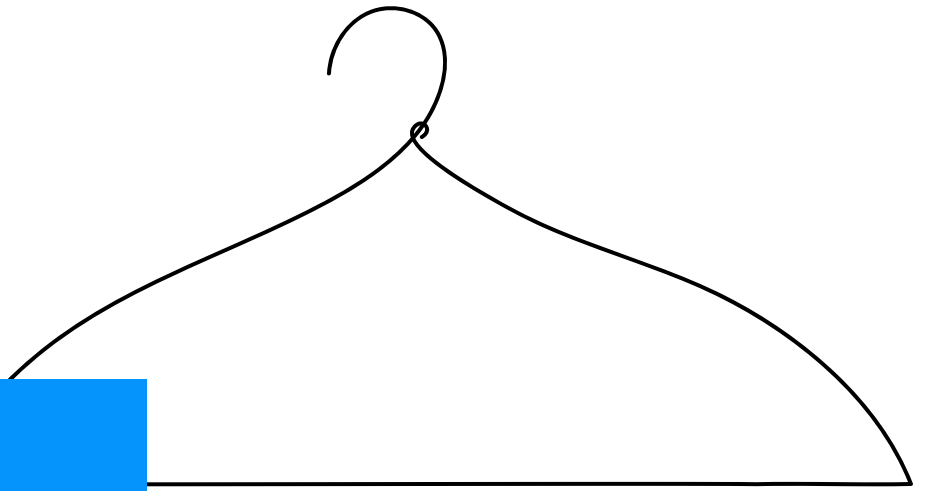
Embracing the agile methodology was one of the most imperative steps I took during the creation of this thesis. The methodology states in its

manifesto that developers should value “individuals and interactions over processes and tools,” and “responding to change over following a plan.” By placing a heavy emphasis on the findings of my user research, and responding to those findings by changing the product I had planned to build, I was able to construct a new plan for a product that will respond to needs explicitly expressed by individual users. Agile was vital to the design stage of “Like a Glove,” so I made it a priority to adhere to the methodology during the development of the proof of concept. I plan to continue to prioritize the agile methodology in the development of the actual tools.

## **Development Process**

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I developed the proof of concept using these tools over the course of a few months. It was a learning process, as I had never worked with Vue.js or Firebase before. Both tools worked well for the purposes of the proof of concept, and I plan to use them in the development of the final progressive web app. Throughout the development of the proof of concept, I tracked my progress in a Trello Kanban board. This practice helped me keep track of which tasks belonged to which sprints, and ultimately guide me through the development in a logical, organized manner.



## **Progressive Web App Proof of Concept**

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### **GitHub Repository**

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[github.com/laurenciulla/like-a-glove](https://github.com/laurenciulla/like-a-glove)

### **Demonstration of Key Functionalities**

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[vimeo.com/412090432](https://vimeo.com/412090432)



## Next Steps for “Like a Glove”

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The proof of concept for “Like a Glove” proves that it is a feasible product. I plan to continue the development of “Like a Glove” beyond this thesis, with the ultimate goal of solving the key problems: users do not know what size to order when shopping online, users are uncertain about the items they order online due to a lack of familiarity with the items prior to purchase, and users cannot visualize items on themselves when shopping online. “Like a Glove” is a user-centered solution that will improve the user experience of shopping online.

### User Testing

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Arguably the most important next step for this project is user testing. I learned the importance of user-centered design at the beginning of this project, and I plan to continue to apply it throughout the future of “Like a Glove.” I can use the proof of concept for user testing, and evaluate how well research participants are able to complete the user stories I outlined in the user research phase. Based on the results of this future testing, I will iterate on the interface designs to tailor them to the needs of actual users. User testing throughout the development process is vital, as it ensures that

user needs are remaining at the heart of the product.

## **Developing the App and Google Chrome Extension**

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The final phase of this project will be the actual development of the progressive web app and Google Chrome extension. I plan to employ the same tools I used in the proof of concept: Vue.js, Firebase, and agile. I also plan to conduct guerrilla user testing throughout the development process to ensure I can iterate on my designs and implement user feedback as I build the tools. This process will validate (or invalidate) the assumptions I have made about my users while designing the user experience and interface, so it is imperative that I continue these useful and inexpensive tests throughout development.



## Conclusion

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“Like a Glove” has a long way to go before it achieves its goal of improving the overall user experience of online shopping. In the meantime, this thesis serves as a prime example of why user experience designers need to separate themselves from their users and work to uncover real user problems. Needfinding research completely changed the course of my thesis, shaping the project according to user needs and establishing the basis of a plan to create a product that would respond to the specific goals and problems of my target users. What started with an ill-founded product pitch has developed into a fascinating study on the importance of user research and user-centered design.



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